Abstract

In a MIMO system the signals transmitted from the various antennas are processed so as to improve the ability of the receiver to extract them from the received signal even in the face of some correlation. More specifically the number of bit streams that is transmitted simultaneously is adjusted, e.g., reduced, depending on the level of correlation, while multiple versions of each bit stream, variously weighted, are transmitted simultaneously. The variously weighted versions are combined to produced one combined weighted signal. The receiver processes the received signals in the same manner as it would have had all the signals reaching the receive antennas been uncorrelated. The weight vectors may be determined by the forward channel transmitter using the channel properties of the forward link which are made known to the transmitter of the forward link by being transmitted from the receiver of the forward link by the transmitter of the reverse link or the weight vectors may be determined by the forward channel transmitter using the channel properties of the forward link and the determined weight vectors are made known to the transmitter of the forward link by being transmitted from the receiver of the forward link by the transmitter of the reverse link. The channel properties used to determine the weight vectors may include the channel response from the transmitter to the receiver and the covariance matrix of noise and interference measured at the receiver.